UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,161	01/03/2005	Hans Georg Leffer	TS9502US	6799

7590 08/28/2009

Jennifer D Adamson
Shell Oil Company
Intellectual Property
P O Box 2463
Houston, TX 77252-2463

EXAMINER	
NGUYEN, HUY TRAM	
ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
08/28/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/521,161	LEFFER, HANS GEORG	
	Examiner	Art Unit	
	HUY-TRAM NGUYEN	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5,6,9,10 and 12-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5,6,9,10 and 12-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/11/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments, see the Remarks, filed June 11, 2009, with respect to the rejection(s) of claim(s) 1-7 and 9-14 under 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Owen et al. (4,789,528) in view of Kao et al. (US Patent No. 5,266,281)**.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1, 2, 5, 6, 10, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Owen et al. (4,789,528) in view of Kao et al. (US Patent No. 5,266,281)**.

Regarding Claim 1, Owen et al. reference discloses a reactor system suitable for carrying out exothermic chemical reactions comprising

one or more common reactant feed lines fed into two or more single unit operated reactors which are to be operated as one single unit wherein each reactor comprises a separated, individual reactor **(Figure 1, numeral 51- reactor feed header and numerals 10, 20, 30 and 40 – reactors)**, the reactors having one or more common product discharge lines **(Figure 1, numeral 39 – reactor effluent).**

Owen et al. reference also discloses a heat exchange system **(Figure 1, numeral 19)** for cooling the reactor effluent. However, Owen et al. does not disclose that each reactor comprising a multitubular fixed bed catalyst arrangement and each of the reactors comprises an indirect heat exchange system, which heat exchange systems are jointly operated to cool the reactors as if they were a single unit.

Kao et al. reference discloses a catalytic reactor comprising a multitubular fixed bed catalyst arrangement and an indirect heat exchange system **(Figure 1)**. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the multiubular catalytic reactor as taught by Kao et al., since Kao et al. states at **Abstract** that such a modification would produce high purity products due to the improvement in thermal exchange.

Regarding Claim 2, Owen et al. and Kao et al. references disclose the reactor system of claim 1 comprising between 3 and 8 single unit operated reactors **(Owen et al. - Figure 1, numerals 10, 20, 30 and 40).**

Regarding Claim 5, Owen et al. and Kao et al. references disclose the reactor system of claims 1 comprising one common gas reactant feed line **(Owen et al. - Figure 1, numeral 51- reactor feed header)**.

Regarding Claim 6, Owen et al. and Kao et al. references disclose the reactor system of claims 1 comprising one common gas product discharge line **(Owen et al. - Figure 1, numeral 39 – reactor effluent – gas product is intended use of the apparatus)**.

Regarding Claim 10, Owen et al. and Kao et al. references disclose the reactor system of claim 1 comprising four single unit operated reactors **(Owen et al. - Figure 1, numerals 10, 20, 30 and 40)**.

Regarding Claim 13, Owen et al. and Kao et al. references disclose the reactor system of claim 1 comprising one common liquid product discharge line **(Owen et al. - Figure 1, numeral 39 – reactor effluent – liquid product is intended use of the apparatus)**.

4. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Owen et al. (4,789,528) in view of Kao et al. (US Patent No. 5,266,281) and Cachera et al. (US Patent No. 3,968,653)**.

Regarding Claim 12, Owen et al. and Kao et al. references disclose the reactor system of claim 1 except for the heat exchange system comprises a thermosiphon system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the thermosiphon heat exchange as taught by Cachera et al., since Cachera et al. states at **Column 1, Lines 62-68** that such a modification

would provide a fair degree of reliance on natural circulation of the primary cooling medium by using thermosiphon.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kao et al. (US Patent No. 5,266,281) in view of Owen et al. (4,789,528)**.

Regarding Claim 9, Kao et al. reference discloses a process for the preparation of hydrocarbons by reaction of carbon monoxide and hydrogen in the presence of a catalyst at elevated temperature and pressure in a single multitubular catalytic reactor wherein the reactor comprises an indirect heat exchange system for cooling the reactor **(Abstract and Figure 1)**.

However, Kao et al. does not disclose wherein the reactor system comprises one or more common reactant feed lines fed into two or more single unit operated reactors which are operated as one single unit, each reactor comprising a multitubular fixed bed catalyst arrangement, the reactors having one or more common product discharge lines.

Owen et al. reference discloses a reactor system comprising one or more reactors having one or more common reactant feed lines and one or more common product discharge lines wherein the product effluent being cooled by an indirect heat exchange system **(Figure 1, numerals 51, reactor feed header, 10, 20, 30 and 40 – reactors and 39 - reactor effluent).** It would have been obvious to one having ordinary skill in the art at the time the invention was made to operate the process of Kao et al. using the multi reactor system as taught by Owen et al., since Owen et al. states at

Column 1, Lines 28-41 that such a modification would be more economical than using one very large reactor.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Kao et al. (US Patent No. 5,266,281) in view of Owen et al. (4,789,528) and Haag et al. (US Patent No. 4,279,830).**

Regarding Claim 14, Kao et al. and Owen et al. references disclose the process of claim 9 except for the catalyst comprises a cobalt catalyst.

Haag et al. reference discloses a process for the preparation of hydrocarbons by reaction of carbon monoxide and hydrogen in present of cobalt catalyst at elevated temperature and pressure **(Abstract and Column 1, Lines 39-42)**.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the cobalt as the catalyst for producing methanol, since Haag et al. reference states at **Column 1, Lines 39-42** that cobalt catalyst is well known for use in converting synthesis gas (carbon monoxide and hydrogen) to hydrocarbon mixtures.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUY-TRAM NGUYEN whose telephone number is (571)270-3167. The examiner can normally be reached on MON- THURS: 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HTN
8/26/09

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797